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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,875	07/07/2003	Fujio Akahane	Q76460	6960

23373 7590 09/29/2005

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EXAMINER	
MRUK, GEOFFREY S	

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 09/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/612,875	AKAHANE, FUJIO	
	Examiner	Art Unit	
	Geoffrey Mruk	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) *8-15* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 7* is/are rejected.

7)☒ Claim(s) *6* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/2/04, 4/25/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Claims 8-15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 14 September 2005.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Yasukawa et al. (US 6,139,132).

With respect to claim 1, Yasukawa discloses a liquid ejection head (Fig. 24; Column 3, lines 29-41) comprising:

- a metallic cavity unit (Fig. 24, elements 13 and 116), formed with liquid flow passages (Fig. 24, element 84) respectively continued from a common liquid reservoir to nozzle orifices (Fig. 24, element 85) via pressure chambers;

- an actuator unit (Fig. 24, element 110), in which a plurality of piezoelectric elements (Fig. 24, element 11) are supported on a fixation plate in a cantilevered manner;
- a resin casing (Fig. 24, element 100), formed with a first face onto which the cavity unit is bonded (Column 15, lines 8-27), and
- an actuator chamber (Fig. 24, element 101) which accommodates the actuator unit therein such that free ends of the piezoelectric elements are abutted onto the cavity unit; and
- a metallic reinforcement member (Fig. 24, element 107), integrally molded with the casing such that at least a part thereof is buried in the casing at the vicinity of the first face (Column 13, lines 60-67; Column 14, lines 1-3).

With respect to claim 2, Yasukawa discloses the reinforcement member extends (Fig. 24, element 107) in the casing (Fig. 24, element 100) so as to surround the actuator chamber (Claim 22, pitch/array of element 107).

With respect to claim 3, Yasukawa discloses a whole body of the reinforcement member (Fig. 24, element 107) is buried in the casing (Fig. 24, element 100).

With respect to claim 4, Yasukawa discloses the reinforcement member (Fig. 24, element 107) is formed with a hole filled with resin forming the casing (Fig. 24, element 100; Column 15, lines 40-41, i.e. injection molding).

With respect to claim 5, Yasukawa discloses a part of the reinforcement member (Fig. 24, element 107) serves as the first face (Fig. 24, interface between elements 107, Δ g, and 116).

With respect to claim 7, Yasukawa discloses the reinforcement member (Fig. 24, element 107) is comprised of a metal selected from the group consisted of stainless steel, nickel, aluminum, alumetized aluminum and nickel-plated aluminum (Column 13, lines 60-67; Column 14, lines 1-3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wanibe (JP 2001-113697) in view of Ohta et al. (US 5,818,482).

With respect to claim 1, Wanibe discloses a liquid ejection head (Drawing 1) comprising:

- a cavity unit (Drawing 1, element 17), formed with liquid flow passages (Drawing 1, element 11) respectively continued from a common liquid reservoir to nozzle orifices (Drawing 1, element 9) via pressure chambers;
- an actuator unit (Drawing 1, element 5), in which a plurality of piezoelectric elements are supported on a fixation plate (Drawing 1, element 4) in a cantilevered manner;

- a resin casing (Drawing 1, element 2), formed with a first face onto which the cavity unit is bonded (paragraph 0020), and
- an actuator chamber (Drawing 1, element 12) which accommodates the actuator unit therein such that free ends of the piezoelectric elements are abutted onto the cavity unit; and
- a metallic reinforcement member (Drawing 1, element 1), integrally molded with the casing (paragraph 0035) such that at least a part thereof is buried in the casing at the vicinity of the first face (English Abstract).

With respect to claim 2, Wanibe discloses the reinforcement member extends (Drawing 1, element 1) in the casing (Drawing 1, element 2) so as to surround the actuator chamber (Drawing 4, array of element 1).

With respect to claim 3, Wanibe discloses a whole body of the reinforcement member (Drawing 1, element 1) is buried in the casing (Drawing 1, element 2; English Abstract).

With respect to claim 4, Wanibe discloses the reinforcement member (Drawing 1, element 17) is formed with a hole filled with resin forming the casing (paragraph 0035, i.e. insert molding).

With respect to claim 5, Wanibe discloses a part of the reinforcement member (Drawing 1, element 1) serves as the first face (Drawing 4, interface between elements 1 and 6).

With respect to claim 7, Wanibe discloses the reinforcement member (Drawing 1, element 17) is comprised of a metal selected from the group consisted of stainless

steel, nickel, aluminum, alumetized aluminum and nickel-plated aluminum (paragraphs 0030 and 0031).

However, Wanibe fails to disclose metallic cavity unit.

Ohta discloses an ink jet printing head where the "Similarly to the oscillation plate 12, the nozzle plate 16 is made of a thin plate of nickel (Ni) which is cast through electroforming. The other metal materials may be used instead" (Column 10, lines 40-43).

At the time of the invention, it would have been obvious to combine the teachings of Ohta for the ink-jet recording head of Wanibe. The motivation for doing so would have been "to provide a multi-nozzle ink jet printing head which increases an efficiency of ink discharging from nozzles without producing the interference of adjacent ink chambers and realizes a high-frequency piezoelectric actuation needed for the practical use" (Column 2, lines 61-67; Column 3, lines 1-3).

Allowable Subject Matter

Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey Mruk whose telephone number is 571 272-2810. The examiner can normally be reached on 7am - 330pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GSM
9/26/2005

GM

9/28/05
MANISH S. SHAH
PRIMARY EXAMINER